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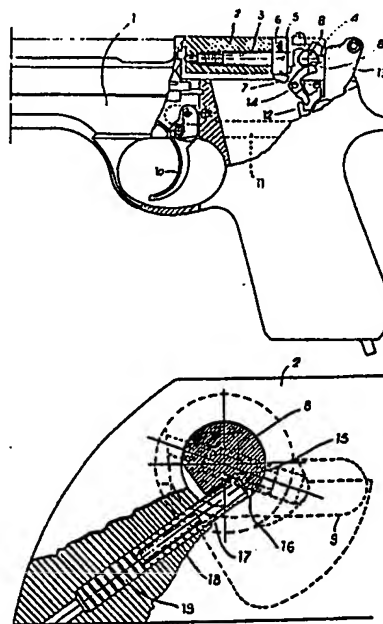
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⑤④ **Pistol with automatic safety device on firing pin.**

⑤⑦ A safety device for an automatic pistol of the double action type includes an automatic safety on the firing pin and has a striking lever (12) for the hammer. The device comprises a cammed shaft (8, 8'), rotatably mounted to a carriage (2) of the pistol and displaceable manually in one direction for control of the lever (12) for disengagement of the hammer. The cammed shaft (8, 8') is rotatable in an opposite direction by means of a spring-loaded piston (17) for blocking the shaft in a rest position where it does not interfere with firing of the pistol.



"PISTOL WITH AUTOMATIC SAFETY DEVICE ON FIRING PIN"

The present invention relates in general to automatic pistols having automatic safety on their firing pin, and in particular to a new and useful device for the automatic
5 return to rest or to an inoperative position of the striking mechanism for the hammer of such a pistol.

In the field of safety devices for automatic pistols, automatic safety devices are known for the firing pin of the weapon. These safety devices are capable of preventing the
10 operation of the pin and thus the firing of a bullet from the barrel of the weapon, as a result of an accidental dropping of the weapon and/or of an involuntary and uncontrolled action of the hammer on the firing pin itself. Such a device comprises a safety block mounted on the breech block of the
15 firing pin of the pistol (hereinafter called the carriage) in a plane perpendicular to the axis of the firing pin and in an intercepting and blocking position of the firing pin, when the trigger is at rest. The safety block is normally in a working position for blocking the firing pin and is
20 displaced to the rest or inoperative position for freeing the firing pin, only at the moment when the hammer is disengaged by the trigger.

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Another known safety device, which is the subject of a patent issued to the present applicant, concerns automatic pistols of the type having a so-called "interrupted firing pin" . This device comprises a safety shaft or rod, which
5 is manually operative and interacting with the firing pin so as to neutralize the action thereof. The safety shaft or rod also interacts through the action of an intermediate lever, with a trip lever of the hammer, so as to automatically disengage the hammer immediately following the
10 neutralization of the firing pin. The firing pin is blocked by two elements, a spring-actuated frontal one and a rear one that is mounted on the safety shaft or rod and which is positionable by their axially or non-axially with respect to the frontal element mentioned above, in order
15 to activate and, respectively neutralize the firing pin.

According to the known art and technique, the safety shaft and rod is rotated on the carriage and is mounted in a direction which is transverse to the firing pin. Further, it is provided with a cammed portion which controls the
20 intermediate lever that is interacting with the tripped lever for the automatic disengagement of the hammer, when the shaft or rod is rotated to neutralize the action of the interrupted firing pin.

In practice, the safety rod or shaft must be displaced
25 manually, and therefore, voluntarily, by means of a control lever both in the working position and in the rest position, which positions are determined and defined by at least one spring spring-loaded lever means. According to the above described arrangement, the safety shaft rod, when in the
30 safety working position, may control a small spring loaded piston that interacts with the tripping mechanism connected to the trigger which actuates the trip lever of the hammer.

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The tripping mechanism is then moved away from the trip lever, so as to avoid the possibility that the user might act on the tripping mechanism when the weapon is in the safety position .

- 5 A pistol may now be provided, concurrently, with the automatic safety blocking mechanism on the firing pin and with an automatic disengaging device for the hammer when the weapon is in its safety position. Under these circumstances, since the automatic safety blocking device on the firing
10 pin is always operative until the trigger is acted upon, it is no longer necessary to also have a manually operated safety device or some means for moving the trigger mechanism away from the trip lever.

- There remains, nevertheless, the need for means for the
15 disengagement and the striking of the hammer, when the weapon is not to be used. These means for the disengagement of the hammer should, however, return automatically, after each action thereof, to a rest position corresponding to the position of readiness to fire the weapon. This is necessary
20 in order not to impede or delay immediate reuse of the pistol without any manual intervention.

- Starting from the above described premise, it is an object of the present invention to provide a device which is applicable to automatic pistols of the type having automatic safety
25 means on the firing pin and a lever for the manual striking of the hammer, which device allows the automatic return to a rest or inoperative position of the striking means of the hammer, so as to leave the weapon always in a position of readiness and immediate reuse.

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It is another object of the present invention to provide a device for the automatic return to a rest or inoperative position of the striking means of the hammer, which device employs and exploits the very same safety element described
5 hereinabove, although structurally differently arranged.

It is possible, therefore, to obtain the advantage of having a device mounted on the carriage and free of the danger of being inadvertently actuated and of uncontrollably disengaging the cocked hammer, in the event of a rapid operation of
10 the carriage itself during the arming of the pistol.

For this purpose, the present invention is directed to a device for the automatic return to a rest or inoperative position of the striking means of the hammer of pistols with automatic safety devices on the firing pin, wherein
15 the firing pin is displaceable to a rest position by means of kinetic action controlled by the trigger of the pistol, the striking mechanism comprising a cammed, rotating shaft transversely mounted on the carriage, the carriage carrying a "so-called interrupted" type firing pin, and a rocking lever
20 actuated by the rotation of the cammed shaft for the disengagement of the hammer by means of a trip lever in the hammer, the shaft carrying a portion of the firing pin, the portion being positionable in and out of alignment with respect to another portion of the firing pin, the device
25 being characterized in that the cammed rotating shaft is manually displaceable in the working direction to determine the disengagement of the hammer, and automatically in the opposite direction to return to the rest position by means of a spring-loaded piston, the piston acting eccentrically
30 on the shaft in an oblique direction with respect to the axis shaft.

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A still further object of the invention is to provide a device for the automatic return of a striking mechanism for the hammer of a pistol having an automatic safety block which is simple in design, rugged in construction and
5 economical to manufacture.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating
10 advantages and specific objects attained by its uses, reference is made to the accompanying drawings and descriptive matter in which a preferred embodiment of the invention is illustrated.

In the drawings:

15 Fig. 1 is a side elevational view of an automatic pistol including the device of the present invention;

Fig. 2 is a partial, longitudinal sectional view of the pistol, taken in the plane of the firing pin and partly in elevation;

20 Fig. 3 is a partial sectional, side view of the pistol, opposite to the view of Fig. 2;

Figs 4, 5 and 6 are sectional views showing three consecutive positions of the rotating shaft or rod which controls the disengagement of the hammer; and

25 Fig. 7 is a sectional view of the auxiliary means for the blockage of the shaft or rod in a rest or inoperative position.

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Referring now to Figs. 1 through 3, a carriage 2 for the firing pin is mounted in a known manner to the body 1 of the pistol. The firing pin is of the so-called "interrupted" type and comprises a spring-loaded, frontal element 3 and
5 a rear element 4 that can be positioned either axially or non-axially with respect to the frontal element for the actuation and, respectively, neutralization of the firing pin.

The frontal element is associated with an automatic safety
10 block 5 mounted on the carriage 2 in a direction perpendicular to the axis of firing pin and movable from a first position, in which it intercepts and blocks the firing pin, to a second position, in which it is at rest, so as to allow the firing pin to be operative. The safety block
15 5 is normally kept in the working position by a spring 6, which acts in a downward direction and is moved upwardly to a rest position by a rocking lever 7.

The rear element 4 of the firing pin, on the other hand, is mounted on a rotating shaft or rod 8 positioned
20 transversely on the carriage 2 and provided, at one extremity thereof, with a control lever 9.

The pistol further comprises a trigger 10, to which is connected one extremity of a tripping mechanism 11. The opposite extremity of the tripping mechanism 11 cooperates,
25 in a manner known per se, with a trip lever 12 (for the engagement and disengagement of the hammer 13), with the hammer itself and with the rocking lever 7 (for the displacement of the safety block 5 of the firing pin to a rest position, when the trigger is acted upon). The rotating

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shaft 8 is provided with a cammed portion defined by a levelling or abatement 8' and cooperates, in a manner already known, with a rocking lever 14, which in turn serves to displace the trip lever 12, so that the hammer 13 might be
5 disengaged each time the shaft is rotated by the manual operation of the control lever 9.

In order to disengage the hammer 13, when the weapon is not to be used, it is sufficient to rotate the shaft 8, obtaining at the same time a displacement of the rear element 4 of
10 the firing pin, axially disaligned with respect to the frontal element 3. The firing pin will concurrently be neutralized, even if temporarily.

The shaft 8 is in fact so arranged so as to automatically return to its original rest or inoperative
15 position as soon as the manual action on it (which caused its original displacement) ceases. This will result in the realignment of the rear element 4 of the firing pin with the frontal element 3, so that the weapon is now ready for its successive employment without further manual
20 intervention.

To this effect, the shaft 8 is provided on its extremity opposite to that which is connected to the control lever, with a step 15 eccentrically made with respect to the axis of the shaft. The shaft is, further, provided with a
25 radial plane or surface 16, which connects with the step 15 on the outer surface of the shaft. Step 15 is associated with a piston-like pusher 17 urged by a pre-compressed spring 18. Both pusher 17 and spring 18 are seated or positioned in a seat 19 provided in the sides of the
30 carriage 2 and are oriented in a tangential direction with respect to the shaft 8. The action of the spring-actuated piston 17, 18 against the eccentric step 15 of the shaft 8

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- creates a torque force moment which tends to keep the shaft in the rest or inoperative position (see Fig. 4) and to return it automatically to this position after each rotation thereof (see Fig. 6). In fact, when the safety is rotated
- 5 to the working position for the disengagement of the hammer, the spring 18 is loaded further, thus increasing the torque which permits the return of the shaft to its original position. On the other hand, when the shaft is fully
- 10 rotated in the working position (see Fig. 6), the spring loaded piston 17,18 is in position to act against the radial plane or surface 16, positioned at its maximum distance from the axis of the shaft, so that the torque moment is greatest and favors even more the rotation of the shaft in the opposite direction.,
- 15 It is to be observed, finally, that the shaft 8 may be provided, adjacent the control lever 9 with a spring-loaded auxiliary piston 20, which rotates together with the shaft 8 and which cooperates with a cammed hollow or cavity 21 constructed in carriage 2 for defining and establishing
- 20 the rest or inoperative position of the shaft, as shown particularly in Fig. 7 of the drawings.

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C L A I M S

1^) In a pistol having a body (1), a carriage (2) movable on said body, a firing pin (3-4) mounted for movement to said carriage (2), said firing pin having a
5 first portion (3) movable in a selected direction and a second portion (4) alignable with said first portion for being movable therewith in said selected position and disalignable with said first portion, a hammer (13) mounted for movement from a cocked position away from said
10 second portion (4) to a firing position toward said second portion (4) for moving said second portion in its aligned position in said selected direction, said hammer (13) having a trip lever (12) for causing said hammer to move from its cocked position to its firing position, a
15 manually rotatable cammed shaft (8-8') rotatably mounted to said carriage (2) on an axis which is transverse to said selected direction, said second portion (4) being mounted on said cammed shaft (8-8') for movement from its aligned position to its disaligned position with rotation of said shaft, said cammed shaft having a cam portion, a movably mounted rocking lever (14) movable for
20 engaging said trip lever (12) to move said hammer from its cocked position to its firing position when said cam portion of said cammed shaft engages said rocking lever and as said cammed shaft rotates to move said second portion of said firing pin from its aligned position to its disaligned position, said pistol including a safety block (5) movably to said carriage for blocking movement of
25 said first portion (3) of said firing pin in said selected direction, the improvement comprising a spring loaded pusher (17) mounted for movement to said carriage (1), said cammed shaft (8-8') having at least one eccentric surface (15) located eccentrically of said axis of cam-

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med shaft and engaged by said spring loaded pusher (17) for rotating said cammed shaft in a direction to move said second portion (4) of said firing pin from its disaligned position to its aligned position.

- 5 2^) The improvement of claim 1), wherein said eccentric surface comprises a step (15) formed in said cammed shaft (18) at an eccentric location with respect to said axis of said cammed shaft, said spring loaded pusher (17) being engageable with said step (15) for rotating said
- 10 cammed shaft to move said second portion of said firing pin from said disaligned position to said aligned position.
- 3^) The improvement of claim 2), wherein said carriage (2) includes a seat (19), said spring loaded pusher
- 15 being mounted for movement in said seat and including a piston (17) movable in said seat and a spring (18) in said seat biasing said piston toward said cammed shaft (8-8').
- 4^) The improvement of claim 3), wherein said eccentric
- 20 surface of said cammed shaft includes a radial portion (16) adjacent said step (15) and more eccentric than said step with respect to said axis, said cammed shaft being rotatable manually to an extreme position for moving said second portion (4) of said firing pin to its
- 25 disaligned position, said piston (17) being engaged with said radial surface in said extreme position of said cammed shaft for rotating said cammed shaft away from its extreme position.
- 5^) The improvement of claim 4), wherein said carriage
- 30 (2) includes a cammed cavity (21), and a spring loaded auxiliary piston (20) mounted for movement to said cammed shaft (8) and engageable in said cammed cavity (21) for holding said cammed shaft in a position whereat said second portion of said firing pin is in aligned position.

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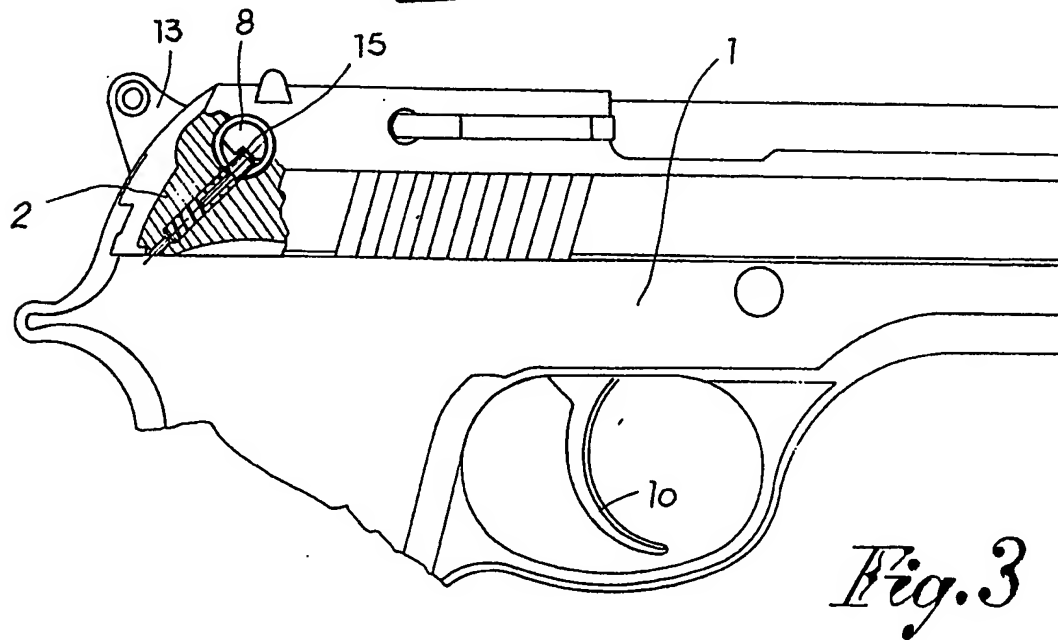
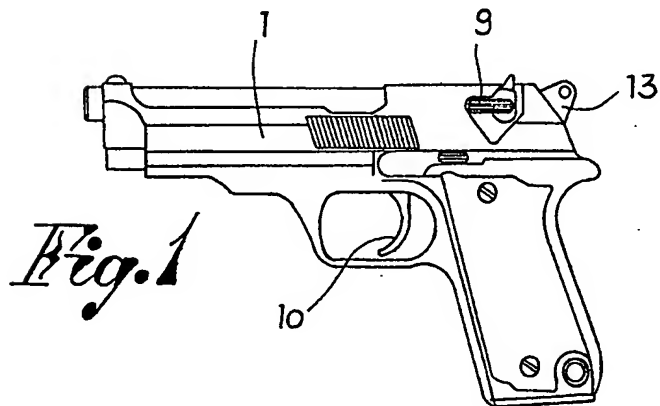
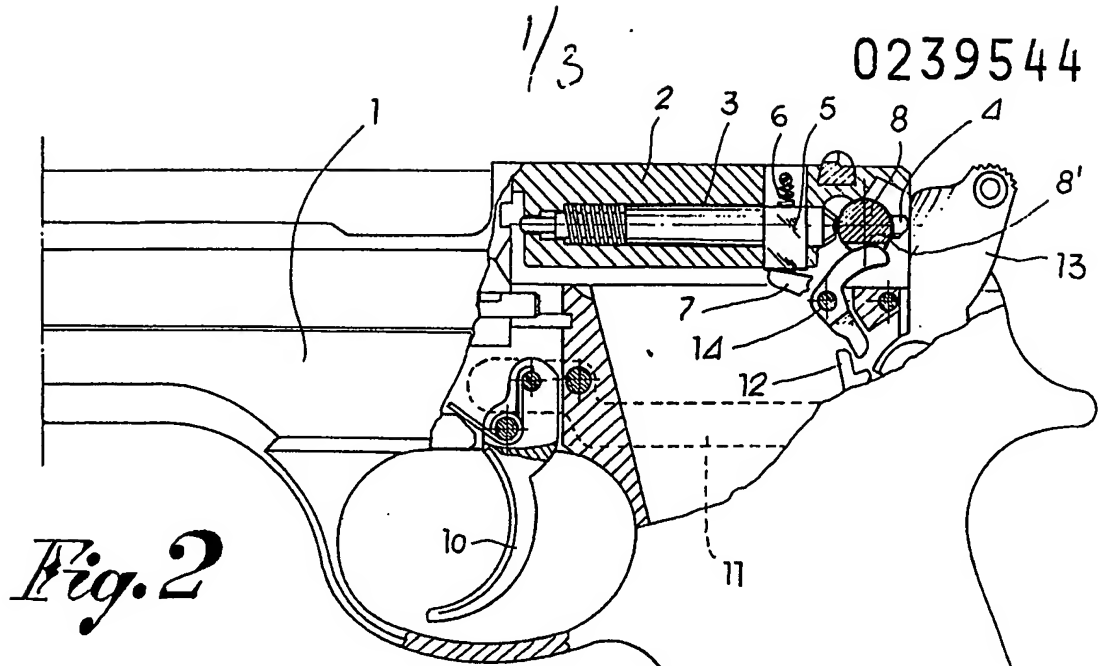


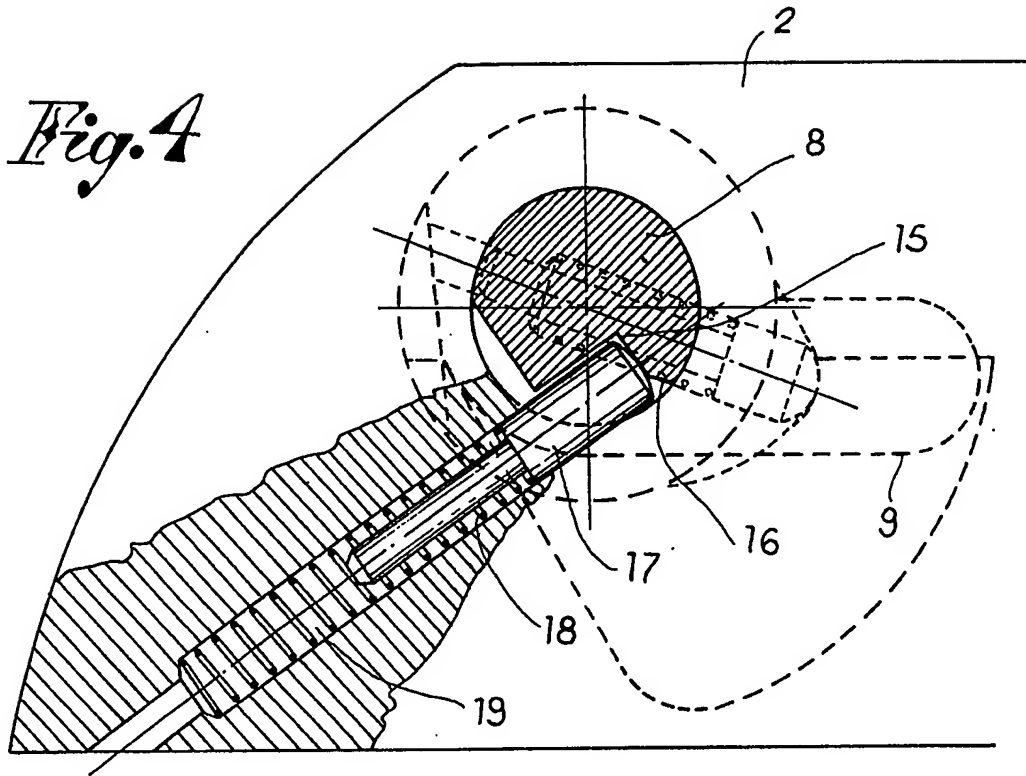
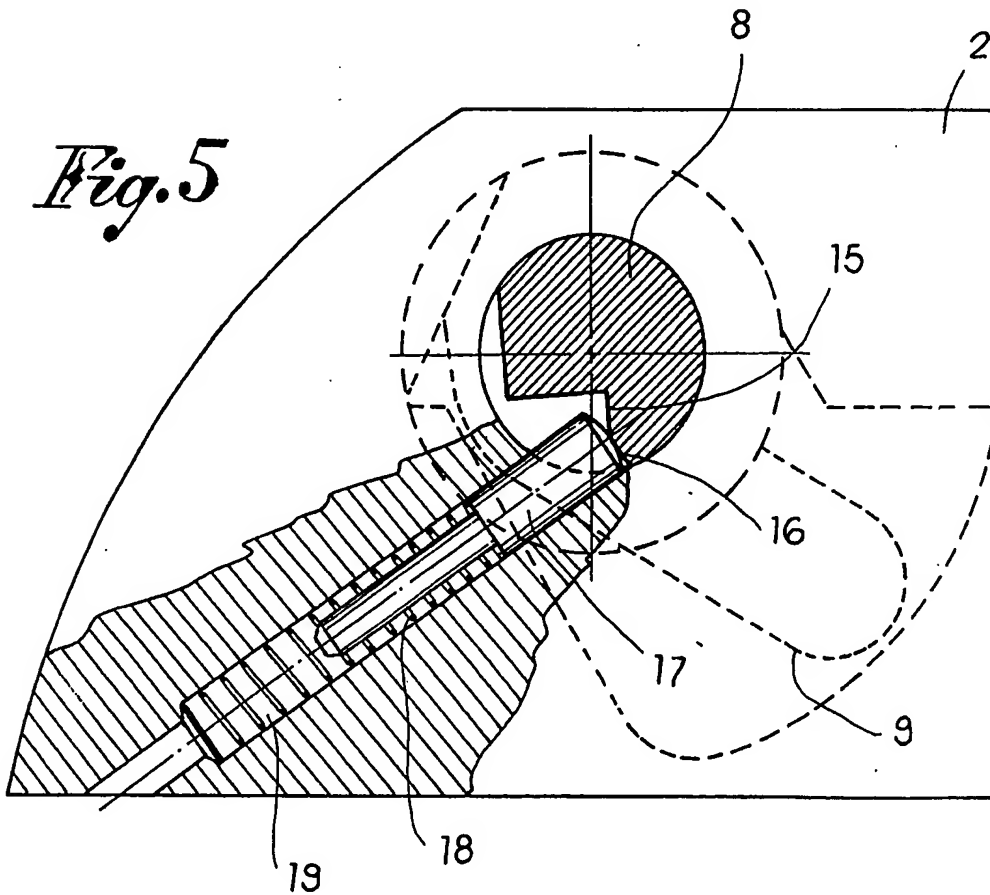
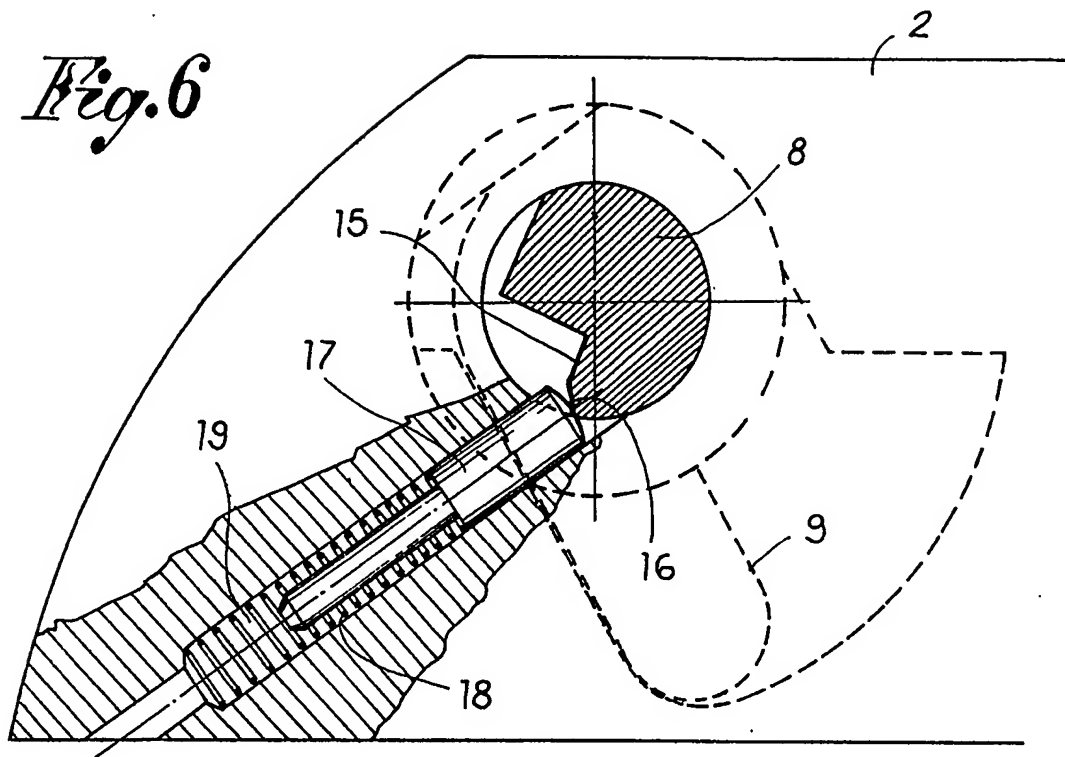
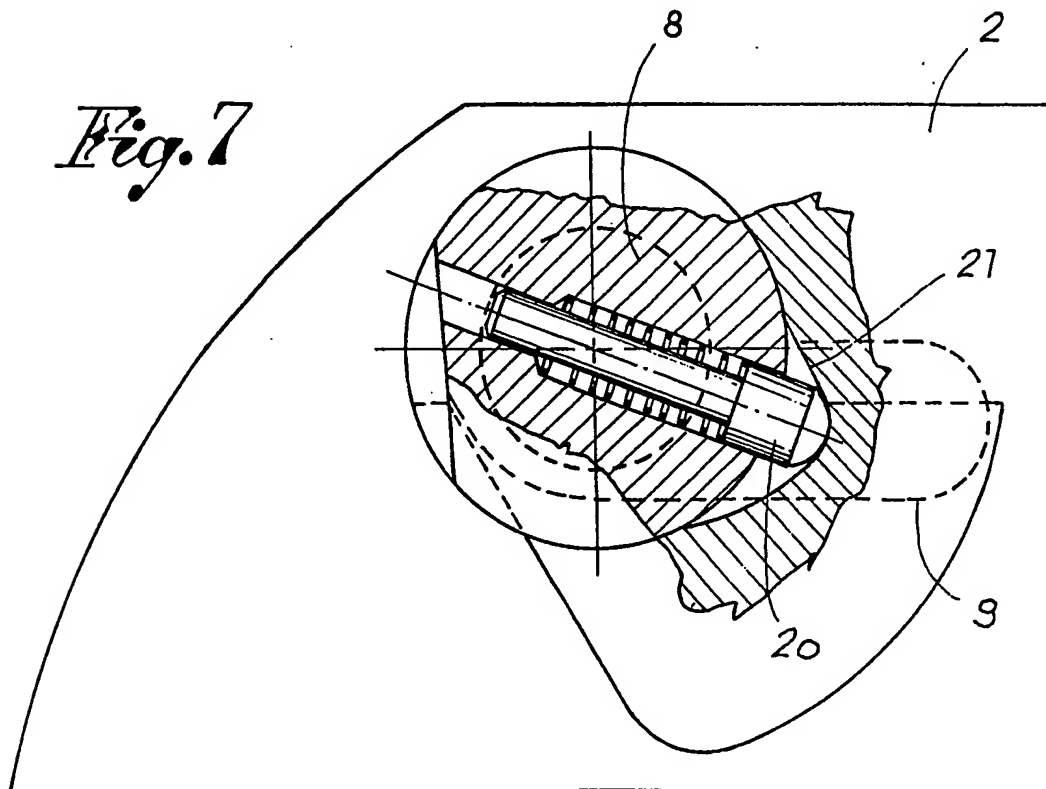
Fig. 4*Fig. 5*

Fig. 6*Fig. 7*



European Patent
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EUROPEAN SEARCH REPORT

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Application number

EP 87 83 0018

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	US-A-3 996 686 (BAKER) * Abstract; column 3, lines 58-68; column 4, lines 1-25; figures 1,3 *	1	F 41 C 17/04
Y	FR-A-2 176 061 (WALTHER) * Page 1, lines 13-40; page 2, lines 1-4; page 2, lines 23-40; page 3; page 4, lines 1-32; figures *	1	
A	FR-A-2 418 437 (BERETTA) * Page 2, lines 22-33; figures 1-5 *	1	
A	DE-C- 670 241 (MAURER) * Figures 1,2 *	1,2	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-2 461 917 (EDER)		F 41 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29-06-1987	Examiner RODOLAUSSE P.E.C.C.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			